A CRUCIAL ROLE OF GUDUCHI (TINOSPORORA CORDIFOLIA) IN NEPHROTIC SYNDROME

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ABSTRACT
Nephrotic syndrome is a kidney disorder characterized by proteinuria, hypoalbuminemia, hyperlipidemia and edema. It can affect any age group. Nephrotic syndrome is a comparatively rare but form major manifestation of kidney disease. Nephrotic syndrome has an occurrence of three new cases per 100000 each year in adults. Management of nephrotic syndrome according to modern science varies with different stages of the disease. The purpose of treatment is to relieve symptoms, prevent complications, and delay kidney damage. Patient with primary nephrotic syndrome needs corticosteroids but many times they may have relapse or become steroid dependent or resistant to it. Then alternative agents like cyclophosphamide, cyclosporine, levamisole which may be used in a combination. According to Ayurveda, there are number of drugs which can be used in nephrotic syndrome but Guduchi (Tinospora cordifolia) plays a specific role in nephrotic syndrome. It belongs to family Menispermaceae. Guduchi is said to be one of the best rasayana (adaptogens) in Ayurveda. As per its chemical constituents it has antioxidant property. It augments or diminishes immune response so it act as immunomodulator. It even
has a nephroprotective property. Hence it is beneficial when used with modern therapeutic drugs in the treatment of steroid dependent frequent relapsers and steroid resistant patients of nephrotic syndrome.

KEYWORDS: Nephrotic syndrome, Guduchi, Immunomodulator.

INTRODUCTION
Nephrotic syndrome is a kidney disorder results from increased permeability of Glomerular basement membrane to plasmaprotein. It is characterized by proteinuria (> 3.5 g/d), which lead to hypoalbuminemia (serum albumin < 2.5 g/dl), hyperlipidemia (serum cholesterol >200 mg/dl) and pitting edema. It can affect any age. Nephrotic syndrome has an incidence of three new cases per 100000 each year in adults. Nephrotic syndrome has many causes but the diseases that affect only kidney are the causes of primary nephrotic syndrome. Minimal change disease, Membranous nephropathy, focal segmental glomerulosclerosis (FSGS) and Membranoproliferative glomerulonephritis are the most common causes of primary nephrotic syndrome. However, FSGS is the most common cause of idiopathic nephrotic syndrome in adults. Minimal change disease is the most common cause of nephrotic syndrome in children. It is responsible for 80% of all cases in children and also responsible for 20% of all cases in adults. Nephrotic syndrome can also be caused by systemic diseases, which are the diseases that affect many parts of the body as well as kidney are the causes of secondary nephrotic syndrome. Diabetic nephropathy and systemic amyloidosis are the most common causes of secondary nephrotic syndrome. Systemic lupus erythematosus, Infection with Hepatitis B or C and HIV, multiple myeloma, vasculitis are also responsible for secondary NS. Pathophysiology: The basic pathophysiology of nephrotic syndrome is not clear completely. In nephrotic syndrome damage to the glomeruli allows proteins like albumin in the blood to leak into the urine. Eventually, blood level of albumin become reduced which leads to hypoalbuminemia. Albumin is a main protein which maintain oncotic pressure. In nephrotic syndrome edema from because of reduced oncotic pressure caused by marked proteinuria. Hypoalbuminemia reflexes to liver for synthesis of generalize protein including lipoprotein and Lipid catabolism is diminished it leads to hyperlipidemia. The damage in NS is mainly associated With inflammation resulting from either primary immune involvement of the kidney or secondary involvement due to immune mediated systemic disorders. Hence NS has emerged as immunological disorder. According to study T suppressor lymphocyte cell activity increases and interleukin–2 level as well as those of
tumour necrosis factor-alpha and other permeability factors levels are high during relapse. Decreased antioxidant defence and an increase in apoptosis rate contribute to the functional abnormalities of T cell in NS. [13] Nephrotic syndrome is treated with anti-proteinuric agents including corticosteroids and immunosuppressive agents to achieve remission but immunosuppression therapy has adverse effects and many times either relapse or become steroid dependent or resistance to it can be seen. Then alternative agents like alkylating agent (cyclophosphamide), Calcineurin inhibitors (cyclosporines, tacrolimus), Immunomodulator drugs (levamisole) are used with long term alternate day corticosteroids in steroid dependent, frequent relapses and steroid resistant nephrotic syndrome. These regimens are effective but most of them having side effect. [14] Guduchi is considered as one of the most divine herb in Ayurvedic medicine. Its botanical name is Tinospora cordifolia and it belongs to the family Menispermaceae. [15][16] As Guduchi is having immunomodulator, antioxidant and nephroprotective properties, it can be effective when used with modern therapeutic drugs to treat above mentioned immunological theory in pathogenesis of NS. Guduchi can be helpful to enhance result of modern drugs by lowering their side effect and increasing efficacy and safety while treating steroid resistant, steroid dependent nephrotic syndrome.

**Need of topic**
The nephrotic syndrome affects the kidney at any age and causes damage to the kidney. Modern medicine are used which help to relieve symptoms, prevent complications and also delay the damage to kidney. But as the drugs used are mostly steroids hence the patient is most likely to develop a dependency on the drug which may result in flaring up of the disease after its stoppage. Likewise steroids have many other untoward effects on our body. Hence, in order to provide a safer, natural option for the management the role of guduchi is important and hence it becomes necessary to study its pharmacological action and use the results for further interpretation of the study.

**AIM AND OBJECTIVES**

**Aim**
1. To study the role of guduchi in nephrotic syndrome

**Objectives**
1. To study the concept of nephritic syndrome
2. To study the pharmacological action of guduchi
3. To do a detailed literary study of allied topics,
MATERIALS AND METHOD

Review work done and literature from the classical texts of Ayurveda and Modern Medicine books and research websites have been incorporated in the study

Properties of Guduchi

Guduchi is one of the most important and widely used herb in ayurvedic medicine. In Ayurveda it is considered as "Rasayana" because it improves immune system and the body resistance against infections.\[17\]

Ayurvedic Properties: Rasa : Tikta, Katu Guna : Guru, Snigdha
Veerya : Ushna Vipaka : Madhura Prabhava : Tridoshahara
Parts used: Stem, Root, Leaves\[18\]

Immunomodulatory Activity: The compounds which are responsible for immunomodulatory and cytotoxic effects are 11- hydroxymuskatone, N-methyle-2pyrrolidone, Nformylannonain, cordifolioside A, magnoflorine, tinocordioside and syringin. These compounds have been reported to improve the phagocytic activity of macrophages, enhancement in nitric acid production by stimulation of splenocyte.\[19\][20] Tinospora cordifolia gives stimulation to macrophage activity leads to increase in secretion of granulocyte-monocyte colony stimulating factor [GM-CSF]. As a result, increases in IL2 and IFN-gamma result in increases natural killer cell activity

Nephroprotective Activity: The effect of Tinospora cordifolia was studied on Swiss albino mice model related to urotoxicity when acute dose of cyclophosphamid was induced. After administration of an extract of Tinospora cordifolia (200 mg/kg) for 5 days with reduced cyclophosphamid. It was evident from the morphological analysis of bladder and also decreased level of Urea, Nitrogen in blood as well as protein in urine. Lowered level of Cytokines IFN-IL-2 because of Cyclophosphamide were found to be increased. The study clearly shows Nephroprotective property of Tinospora cordifolia as it reduces cyclophosphamide induced toxicity.\[21\]

Anti-Oxidant Activity: Methanolic extract of stem of Tinosporacordifolia shows anti-oxidant activity, by increasing the erythrocytes membrane lipid peroxide and catalase activity.\[22\][23][24]
Anti-inflammatory activity: The water extract of the stem of Tinospora cordifolia shows anti-inflammatory activity when study is conducted in albino rats. It has significantly inhibited acute inflammatory response evoked by carrageenin when administered orally and intraperitoneally.\textsuperscript{[25]}

CONCLUSION

Guduchi which is one the most important herb in ayurvedic medicine can be used in treatment of Nephrotic syndrome as it have an immunomodulatory, antioxidant, anti-inflammatory and nephroprotective property. It also helps to reduce side effect of steroid therapy and relapse rate of NS. Guduchi can also lowers side effect of modern therapeutic drugs and increases their efficacy and safety. In this way it may be used with modern therapeutic drugs while treating steroid resistant, steroid dependent and frequently relapse nephrotic syndrome.

REFERENCES